# CLAIMS

1.  A computer implemented method for providing an investor with a structural model of credit risk that incorporates short term uncertainty and drops in security prices that occur in the event of default inherent in defaultable securities, where the investor has incomplete information, comprising the steps of said computer:

    determining a conditional default process to represent a firm's certainty to default;

    using said conditional default process to determine a compensator and pricing trend;

    with said pricing trend, performing any of:

    estimating default probabilities; and

    valuing credit-sensitive securities; and

    outputting to said investor a term structure of default probabilities and fair values of credit sensitive securities.

2.  The computer implemented method of Claim 1, further comprising the step of: calibrating parameters of said model to represent the quality of said incomplete information available to investors.

3.  The computer implemented method of Claim 1, further comprising the step of: estimating diffusive and jump components of credit risk premium.

4.  The computer implemented method of Claim 1, further comprising the step of: estimating market implied recovery rates.

5. The computer implemented method of Claim 1, wherein said step of determining conditional default probability uses information comprising histories of equity prices, debt outstanding, agency ratings, and accounting variables.

6. The computer implemented method of Claim 1, further comprising the steps of:

    providing capability for triggering a default event when a firm value falls below a default barrier value;

    providing capability for incorporating an assumption that said default barrier value is not publicly known;

    providing capability for representing a predefault firm value process by a geometric Brownian motion; and

    using a history of fundamental data and other publicly available information in determining a default barrier distribution and for estimating parameters of said firm value process.

7. The computer implemented method of Claim 6, further comprising the steps of:

    using daily equity prices and equity volatility forecasts, reported liabilities, and risk-free interest rates as input to said step of determining a conditional default probability;

    using option pricing formulae to convert said equity prices and said equity volatility forecasts into associated firm values and other volatility;

    estimating a mean and height of said scaled beta distribution from history of firm leverage ratios; and

    providing capability for calibrating degree of confidence about information by providing variance of said distribution as a free parameter.

8. A system for providing an investor with a structural model of credit risk that incorporates short term uncertainty and drops in security prices that occur in the event of default inherent in defaultable securities, where the investor has incomplete information, comprising:

5 computer means for determining a conditional default process to represent a firm's certainty to default;

computer means for using said conditional default process to determine a compensator and pricing trend;

comptuer means for using said pricing trend to perform any of:

10 estimating default probabilities;

valuing credit-sensitive securities; and

computer means for outputting to said investor a term structure of default probabilities and fair values of credit sensitive securities.


15 9. The system of Claim 8, further comprising:

means for calibrating parameters of said model to represent the quality of said incomplete information available to investors.


10. The system of Claim 8, further comprising:

20 means for estimating diffusive and jump components of credit risk premium.


11. The system of Claim 8, further comprising:

means for estimating market implied recovery rates.

12. The system of Claim 8, wherein said step of determining conditional default probability uses information comprising histories of equity prices, debt outstanding, agency ratings, and accounting variables.

5   13. The system of Claim 8, further comprising:

capability for triggering a default event when a firm value falls below a default barrier value;

capability for incorporating an assumption that said default barrier value is not publicly known;

10   capability for representing a predefault firm value process by a geometric Brownian motion; and

means for using a history of fundamental data and other publicly available information in determining a default barrier distribution and for estimating parameters of said firm value process.

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14. The system of Claim 13, further comprising:

means for using daily equity prices and equity volatility forecasts, reported liabilities, and risk-free interest rates as input to said step of determining a conditional default probability;

20   means for using option pricing formulae to convert said equity prices and said equity volatility forecasts into associated firm values and other volatility;

means for estimating a mean and height of said scaled beta distribution from history of firm leverage ratios; and

capability for calibrating degree of confidence about information by providing

25   variance of said distribution as a free parameter.

15. A computer program product comprising a computer useable medium having control logic stored therein for causing a computer to provide an investor with a structural model of credit risk that incorporates short term uncertainty and drops in security prices that occur in the event of default inherent in defaultable securities,

5   where the investor has incomplete information, comprising:

computer readable program code means for causing the computer to determine a conditional default process to represent a firm's certainty to default;

computer readable program code means for causing the computer to use said conditional default process to determine a compensator and pricing trend;

10   computer readable program code means for causing the computer to use said pricing trend, performing any of:

estimating default probabilities; and

valuing credit-sensitive securities; and

computer readable program code means for causing the computer to output

15   to said investor a term structure of default probabilities and fair values of credit sensitive securities.

16. The computer program product of Claim 15, further comprising:

computer readable program code means for causing the computer to calibrate

20   parameters of said model to represent the quality of said incomplete information available to investors.

17. The computer program product of Claim 15, further comprising:

computer readable program code means for causing the computer to estimate

25   diffusive and jump components of credit risk premium.

18. The computer program product of Claim 15, further comprising:

computer readable program code means for causing the computer to estimate market implied rates.

5    19. The computer program product of Claim 15, wherein said step of determining conditional default probability uses information comprising histories of equity prices, debt outstanding, agency ratings, and accounting variables.

20. The computer program product of Claim 15, further comprising:

10    computer readable program code means for causing the computer to provide capability for triggering a default event when a firm value falls below a default barrier value;

computer readable program code means for causing the computer to provide capability for incorporating an assumption that said default barrier value is not

15    publicly known;

computer readable program code means for causing the computer to provide capability for representing a predefault firm value process by a geometric Brownian motion; and

computer readable program code means for causing the computer to use a

20    history of fundamental data and other publicly available information in determining a default barrier distribution and for estimating parameters of said firm value process.

21. The computer program product of Claim 20, further comprising:

computer readable program code means for causing the computer to use daily

25    equity prices and equity volatility forecasts, reported liabilities, and risk-free interest rates as input to said step of determining a conditional default probability;

computer readable program code means for causing the computer to use option pricing formulae to convert said equity prices and said equity volatility forecasts into associated firm values and other volatility;

computer readable program code means for causing the computer to estimate a

5    mean and height of said scaled beta distribution from history of firm leverage ratios; and

computer readable program code means for causing the computer to provide capability for calibrating degree of confidence about information by providing variance of said distribution as a free parameter.